

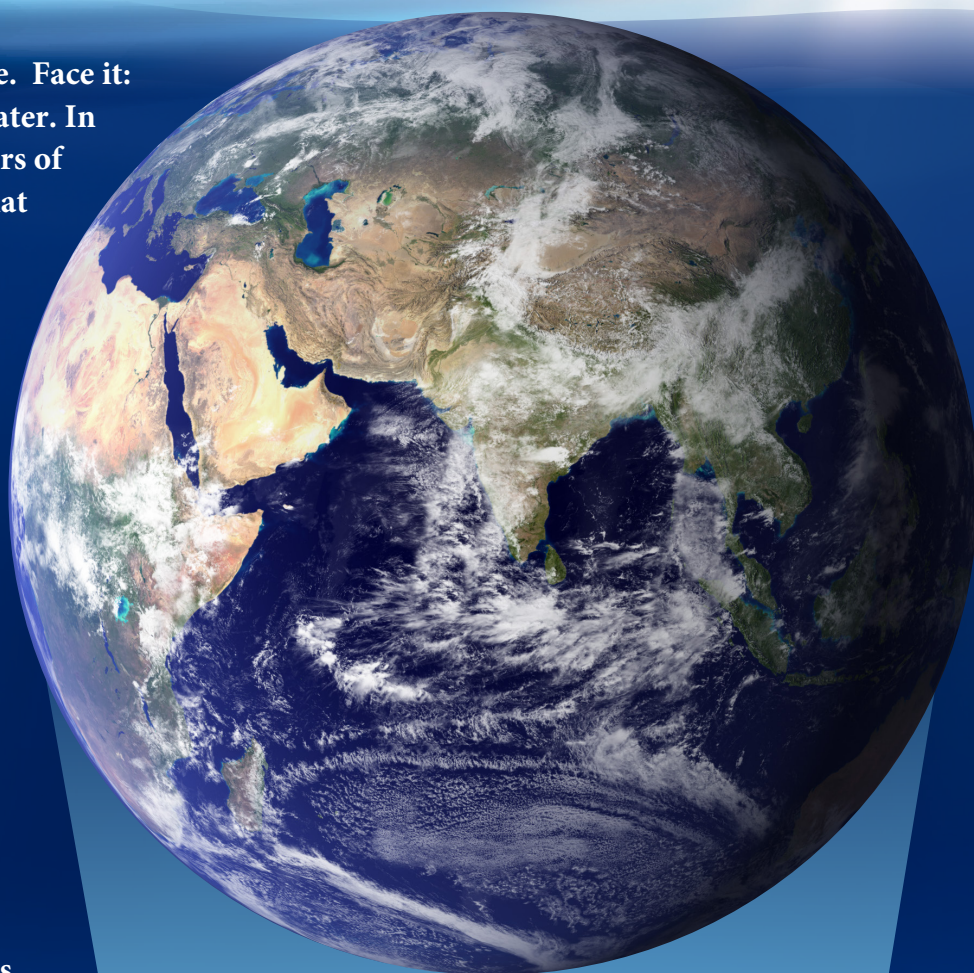
Water, Water, Everywhere!

earthobservatory.nasa.gov/eokids

Water Planet. Blue Marble. Face it: Earth is known for its water. In fact, nearly three-quarters of our planet is covered with water. That is a lot, especially when we consider that we spend most of our time on dry land.

Did you know that only 2.5 percent of the water on Earth is fresh? The rest is salty and undrinkable. All of the seven billion people on the planet (not to mention the bears, birds, bullfrogs, and bugs) drink that little bit of fresh water. Our crops and forests and flowers need water too.

Where do we find fresh water on Earth and how do we monitor it? Satellites provide us with views of fresh water from space. These images show us just some of the ways fresh water is stored on and in the Earth.



Satellite images of Earth show water in its three states: solid, liquid, and gas.



Solid – ice where temperatures are freezing (0°C / 32°F)



Liquid – water in the ocean, lakes, and rivers around the world



Gas – water vapor in the clouds and sky

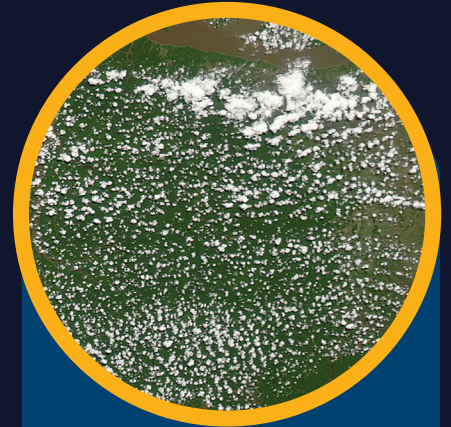
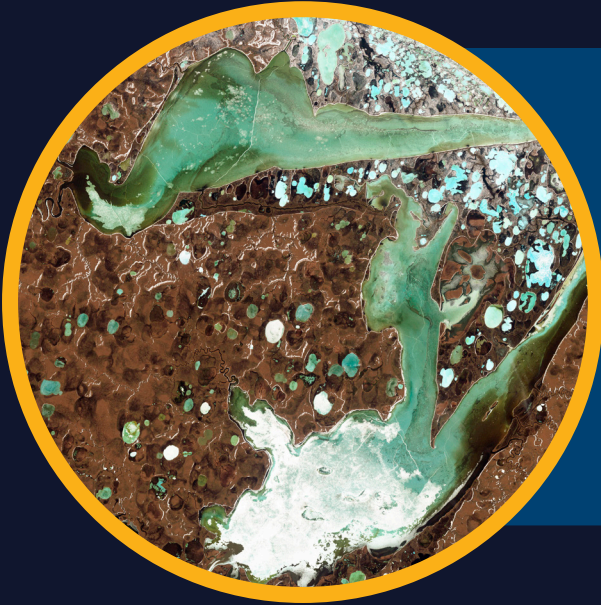
Where on Earth is Fresh Water?

1. Glaciers: About 2/3 of all fresh water is frozen in glaciers and other forms of land ice. A glacier is made up of dense snow that accumulates faster than it melts. These thick blocks of ice can last for hundreds of thousands of years. Two such icy places are Greenland (pictured right) and Antarctica. As you can see, Greenland is more icy-white than green.



2. Permafrost:

Permafrost is water frozen into the soil that stays frozen for over 2 years. We find a lot of permafrost in Alaska and Siberia. The melting and refreezing of permafrost causes pockmarks in the landscape and creates ponds and marshes, as seen in this image of the Siberian coast.



3. Atmosphere:

Water exists in our atmosphere and falls to Earth as precipitation (rain, snow, sleet, and hail). We see water vapor as clouds, mist, and fog, like these clouds over the Amazon Rainforest.



4. Groundwater:

In the ground, water can be found seeping through the space between gravel, dirt, and sand. This water, known as groundwater, can even be found in dry places, like deserts. Farmers in Saudi Arabia can tap into aquifers deep below the sandy surface to access groundwater to water their plants. Pictured here are aquifer-fed circular farm fields.





5. Surface Water:

About 1/5 of the world's surface and other fresh water is stored in lakes. Nearly 1/5 of that is in Russia's Lake Baikal.

Lake Baikal is the world's deepest lake. At more than 1,600 meters (5,000 feet) deep, its depth is almost equal to the combined heights of the:



Empire State Building
New York City

Burj Khalifa building
Dubai

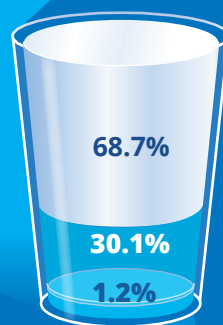
Eiffel Tower
Paris

If all the Earth's water fit into 40 cups, then ...



39 cups = **Salty Ocean Water**

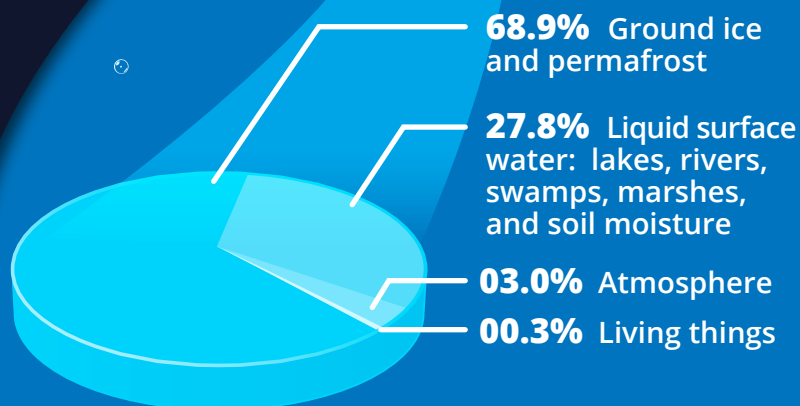
1 cup = **Fresh Water**



Icecaps and glaciers

Groundwater

Surface and other fresh water



Maker Corner

Make a Model Aquifer!

Some of Earth's fresh water is stored in underground reservoirs called aquifers. Rain and snowmelt seep into the ground until it reaches a layer of rock or soil that can hold water. The water is stored in the spaces between rock or soil particles until it is pumped back to the surface through a well.

What you need:

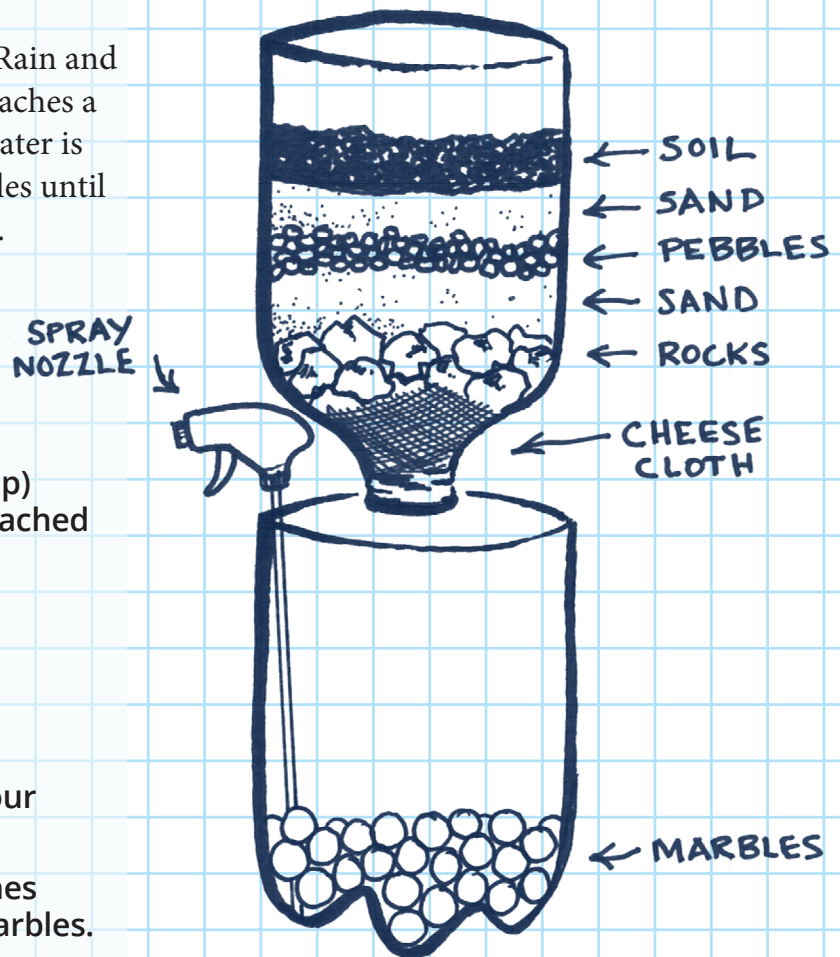
- Scissors
- Small watering can or cup
- Water and ice
- One 2-liter plastic bottle (without the cap)
- Clean spray bottle nozzle with straw attached
- Soil, sand, pebbles, and rocks
- Marbles or glass vase gems
- A piece of fabric or cheesecloth

Make your model:

1. Cut the bottle in half and fill the bottom with seven to ten centimeters (three to four inches) of marbles.
2. Insert the spray nozzle so the straw reaches all the way to the bottom between the marbles. Then place the top portion of the bottle upside-down into the bottom half of the bottle.
3. Fill the top half of the bottle in layers. Start with a piece of cheesecloth to cover the opening, then layer rocks, sand, pebbles, more sand, and finally soil. Fill to about two inches from the top.
4. Pour water from the watering can on top of the soil (like rainfall). Put ice or crushed ice on top of the soil (like snow) and let it melt.
5. The water will collect between the marbles (like an aquifer). Once the aquifer is full, pump out the water using the spray nozzle (like a well).

Did you know?

During the 2012-2016 drought in California, water was pumped out of underground aquifers faster than rain and snow could refill them.



Make This!

You can use the same idea from your model aquifer to create a self-watering planter.



Place 3 to 4 marbles in a plastic cup and enough water to cover the marbles.

Thread a couple pieces of string through the bottom of a second cup then fill with potting soil and a plant.

The string will wick the water up into the soil and water your plant.